

Claims

1. Gear transmission comprising a first shaft (45), an intermediate shaft (44) which is parallel to the first shaft, a first cylindrical pinion (6) which can rotate with the first shaft, a second cylindrical pinion (6) which can rotate with the intermediate shaft, the sets of toothing of the first cylindrical pinion and the second cylindrical pinion having the same number of teeth and the same diameter and meshing with one another, a third cylindrical pinion (5) which can rotate with the first shaft, a fourth cylindrical pinion (5) which can rotate with the intermediate shaft, the sets of toothing of the third cylindrical pinion and the fourth cylindrical pinion having the same number of teeth and the same diameter, a double-toothed face gear (38) mounted between and ^{RESPECTIVELY} meshing with the sets of toothing of the third cylindrical pinion and the fourth cylindrical pinion, the double-toothed face gear being able to rotate about a second shaft which forms an angle with the first shaft, wherein the double-toothed face gear (38) is provided with a coupling toothing (39) for slideably coupling the rotation of the double-toothed face gear (38) to the rotation of the second shaft, and the direction of the coupling toothing is perpendicular to the plane of the sets of toothing of the double-toothed face gear.
2. The gear transmission as claimed in claim 1, wherein the double-toothed face gear is designed as a large ring with the face-gear toothing on either side and the coupling toothing on the internal diameter.
3. The gear transmission as claimed in claim 2, wherein the internal diameter of the sets of face-gear toothing of the double-toothed face gear more

or less corresponds to the internal diameter of the large ring.

4. The gear transmission as claimed in claim 1, 2 or 5, wherein the length of the coupling toothing is greater than half the width of the sets of toothing of the double-toothed face gear.
10. The gear transmission as claimed in one of the preceding claims, characterized in that the sets of toothing of the double-toothed face gear match one another, and the tooth spaces and teeth are symmetrical with respect to a plane which lies centrally between the sets of toothing.
15. The gear transmission as claimed in one of claims 2-5, wherein the large ring has a thickness of at least four times the tooth height of one of the sets of toothing of the double-toothed face gear.
20. The gear transmission as claimed in one of the preceding claims, wherein the third and fourth cylindrical pinions (5) and the double-toothed face gear (38) are helically toothed, and the third and fourth pinions are both right-hand or left-hand pinions.
25. The gear transmission as claimed in one of the preceding claims, wherein the cylindrical pinions (5, 6) are helically toothed, and the first and second cylindrical pinions ~~are right hand pinions~~ ^{have the same direction as} the third and fourth cylindrical pinions ~~when mounted on the same shaft, are also right-hand pinions, and are left-hand pinions if the third and fourth cylindrical pinions are also left-hand pinions.~~
30. The gear transmission as claimed in one of the preceding claims, wherein the cylindrical pinions (5, 6) are helically toothed, and the first and second cylindrical pinions ~~are right hand pinions~~ ^{have the same direction as} the third and fourth cylindrical pinions ~~when mounted on the same shaft, are also right-hand pinions, and are left-hand pinions if the third and fourth cylindrical pinions are also left-hand pinions.~~
35. The gear transmission as claimed in claim 8, wherein the pitch of cylindrical pinions mounted

on the same shaft is identical.

10. The gear transmission as claimed in one of the
preceding claims, characterized in that the
5 double-toothed face gear (38) is mounted slideably
on the housing of a differential of a vehicle.